TRANSITION networks

TELCO 100BASE-TX to 100BASE-FX
Slide-In-Module Media Converters
CDFTFxxxx-10x
USER'S GUIDE

The TRANSITION Networks CDFTFxxxx-10x series dual-port media converters are intended to be installed in a CPSMC1850 *PointSystem™* Conversion Center in a high density TELCO environment. The media converters connect twisted-pair copper TELCO signals (received at the back of the CPSMC1850 chassis) to fiber-optic cable ports on each CDFTFxxxx-10x series media converter (installed at the front of the CPSMC1850 chassis).

CDFTF1111-100

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***ST*** *connectors to* ***multimode 1300 nm*** *fiber cable.*

CDFTF1313-100

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***SC*** *connectors to* ***multimode 1300 nm*** *fiber cable.*

CDFTF1414-100

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***SC*** *connectors to* ***singlemode 1300 nm (LX)*** *fiber cable.*

CDFTF1515-100

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***SC*** *connectors to long-haul* ***singlemode 1300 nm*** *fiber cable.*

CDFTF1616-100

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***MT-RJ*** *connectors to* ***singlemode 1300 nm (LX)*** *fiber cable.*

CDFTF1717-100

Provides a connection between two (2) internal chassis TELCO signals *and two (2) long-wavelength fiber-optic connectors to* ***singlemode 1300 nm (LX)*** *fiber cable.*

CDFTF2929-100

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***SC*** *connectors to* ***singlemode 1310 nm TX (transmit) / 1550 nm RX (receive)*** *fiber cable.*

CDFTF2929-101

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***SC*** *connectors to* ***singlemode 1550 nm TX (transmit) / 1310 nm RX (receive)*** *fiber cable.*

CDFTF2929-102

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***SC*** *connectors to* ***singlemode 1310 nm TX (transmit) / 1550 nm RX (receive)*** *fiber cable.*

CDFTF2929-103

Provides a connection between two (2) internal chassis TELCO signals *and two (2) fiber-optic* ***SC*** *connectors to* ***singlemode 1550 nm TX (transmit) / 1310 nm RX (receive)*** *fiber cable.*

CDFTFxxxx-10x in the Network .2
Installation 5
Operation 7
Fault Isolation and Correction . . .8
Cable Specifications 9
Technical Specifications 11
Compliance Information 12

Related TN Equipment:

CPSMC 1850

PointSystem™ chassis that provides installation slots, power, and optional network management for TRANSITION Networks Media Converter Slide-in-Modules and also provides two (2) external RJ-21 TELCO connectors at chassis back.

21HC45-6

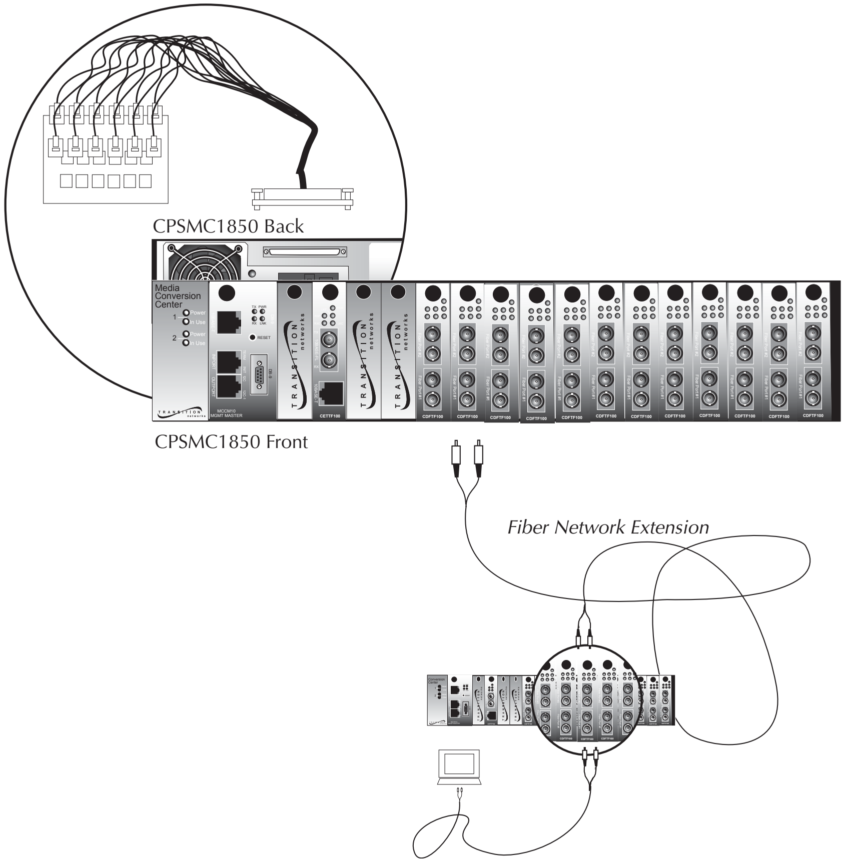
TELCO cable with RJ-21 connector at one end and twelve (12) RJ-45 connectors at other end.

21HC21-6

TELCO cable with RJ-21 connectors at both ends.

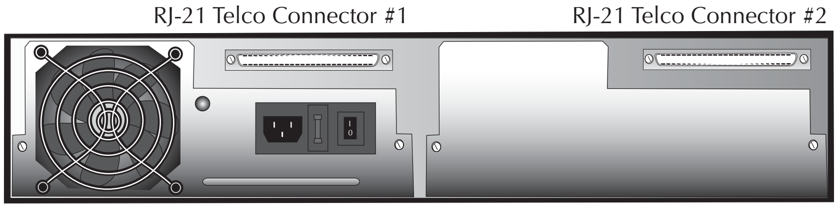
CDFTFxxxx-10x in the NETWORK

The CPSMC1850 *PointSystem™* Conversion Center with TELCO option distributes up to twenty-four (24) 100BASE-TX TELCO signals to two (2) ports (Converter 1 and Converter 2) on each of up to twelve (12) installed CDFTFxxxx-10x media converters to extend TELCO network distances over 100BASE-FX fiber-optic cable.



Telco Network Connection

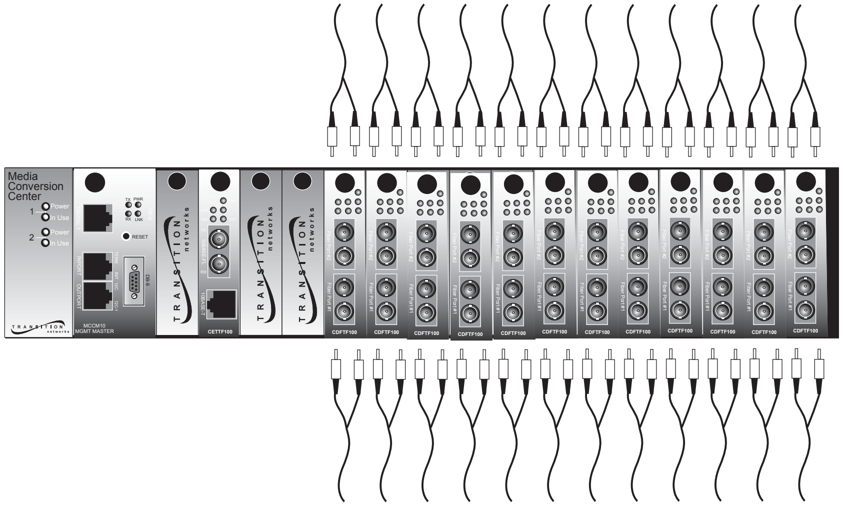
The TELCO option CPSMC1850 Media Conversion Center is shipped with two (2) 50-pin Telco connectors installed at the chassis back. Each TELCO 50-pin connector concentrates twelve (12) UTP connections, which are broken out to six (6) two-port Media Converter Slide-In-Module installation slots.



TELCO Signals

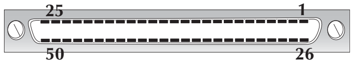
Signals from TELCO connector #2 go to slots 7-12 and signals from the TELCO connector #1 go to slots 13-18. (See page 5.)

Two (2) sets of signals go to the connector on the upper portion of the media converter (Converter 1) and two (2) sets of signals go to the connector on the lower portion of the media converter (Converter 2).



Telco Connectors

NOTE: The chart below shows the 50 signals that go through each Telco connector on the CPSMC1850 to slots 7-12 (Telco connector #2) OR to slots 13-18 (Telco connector #1). In addition, the chart shows how the signals are distributed to the upper and lower ports in a CDFTFxxxx-10x series media converter installed each slot.

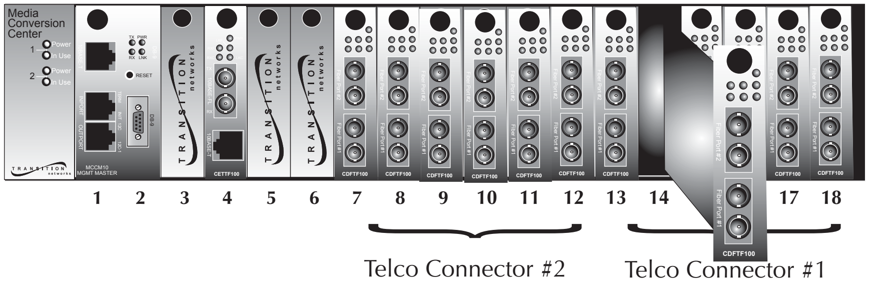


		Pin #	Signal	Pin #	Signal
CHASSIS SLOT #7 or 13	UPPER	1	Port 1 Transmit -	26	Port 1 Transmit +
		2	Port 1 Receive -	27	Port 1 Receive +
	LOWER	3	Port 2 Transmit -	28	Port 2 Transmit +
		4	Port 2 Receive -	29	Port 2 Receive +
CHASSIS SLOT #8 or 14	UPPER	5	Port 3 Transmit -	30	Port 3 Transmit +
		6	Port 3 Receive -	31	Port 3 Receive +
	LOWER	7	Port 4 Transmit -	32	Port 4 Transmit +
		8	Port 4 Receive -	33	Port 4 Receive +
CHASSIS SLOT #9 or 15	UPPER	9	Port 5 Transmit -	34	Port 5 Transmit +
		10	Port 5 Receive -	35	Port 5 Receive +
	LOWER	11	Port 6 Transmit -	36	Port 6 Transmit +
		12	Port 6 Receive -	37	Port 6 Receive +
CHASSIS SLOT #10 or 16	UPPER	13	Port 7 Transmit -	38	Port 7 Transmit +
		14	Port 7 Receive -	39	Port 7 Receive +
	LOWER	15	Port 8 Transmit -	40	Port 8 Transmit +
		16	Port 8 Receive -	41	Port 8 Receive +
CHASSIS SLOT #11 or 17	UPPER	17	Port 9 Transmit -	42	Port 9 Transmit +
		18	Port 9 Receive -	43	Port 9 Receive +
	LOWER	19	Port 10 Transmit -	44	Port 10 Transmit +
		20	Port 10 Receive -	45	Port 10 Receive +
CHASSIS SLOT #12 or 18	UPPER	21	Port 11 Transmit -	46	Port 11 Transmit +
		22	Port 11 Receive -	47	Port 11 Receive +
	LOWER	23	Port 12 Transmit -	48	Port 12 Transmit +
		24	Port 12 Receive -	49	Port 12 Receive +
		25	N.C.	50	N.C.

INSTALLATION

Install Slide-In-Module

NOTE: Before cabling the Slide-In-Module media converters installed in the CPSMC1850 chassis, refer to the diagrams below. Determine the connections to be made from TELCO Connector #2 to Slide-In-Module slot location #7 through #12 (upper port or lower port). Then determine connections to be made from TELCO Connector #1 to Slide-In-Module slot location #13 through #18 (upper port or lower port).



CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing Media Converter Slide-in-Module in the Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the Media Converter Slide-in-Module.

CAUTION: Any Slide-in-Module installation slot in which a Slide-in-Module is NOT installed MUST have a protective plate installed in the installation location. Failure to observe this caution will void Class A compliance.

To install the Media Converter Slide-in-Module into the CPSMC1850 chassis:

1. Carefully slide the Media Converter Slide-in-Module into the installation slot, aligning the Media Converter Slide-in-Module with the installation guides.

   NOTE: Ensure that the Slide-in-Module is firmly seated against the backplane.
2. Secure the Slide-in-Module by securing the panel fastener screw (attached to the Slide-in-Module) to the chassis front.
3. Install the protective plate at ANY Slide-in-Module installation slot in which a Media Converter Slide-in-Module is not installed by securing the attached protective plate panel fastener screw to the chassis front.

INSTALLATION (continued)

Install Cable

NOTE: The media converter does not support autonegotiation. Set the external devices to forced 100 Mb/s full-duplex for half-duplex operation.

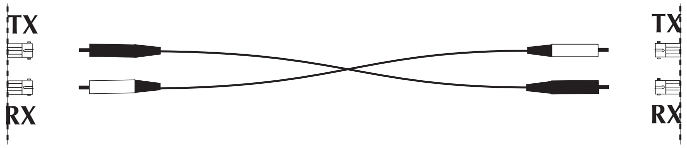
TELCO COPPER

CAUTION: Ensure that the twisted-pair copper TELCO cables do not exceed 60 meters in length. Failure to observe this caution could cause data transfer to fail.

1. Locate the 100BASE-TX cable with the male 50-pin TELCO connector at one end and with twelve (12) RJ-45 connectors at other end (available from TRANSITION Networks, P/N 21HC45-6). (Alternatively, the male 50-pin TELCO connector at both ends; available from TRANSITION Networks, P/N 21HC21-6; may also be used.)
2. Connect the male 50-pin TELCO cable connector to the female 50-pin TELCO connector at the chassis back.
3. Connect the twelve (12) RJ-45 connectors or the male 50-pin TELCO cable connector at the other cable end to the 100BASE-TX TELCO device(s).
4. Repeat steps 3 and 4 to connect the second 100BASE-TX TELCO cable to the second 50-pin TELCO connector at the chassis back.

FIBER

1. Locate or build a 100BASE-FX-compliant fiber cable with male two-stranded TX to RX connectors installed at both ends.
2. Connect the cable with the connector installed at TX location on media converter to the RX location on the attached device.



3. Connect the cable with the connector installed at the RX location on the media converter to the TX location on the attached device.

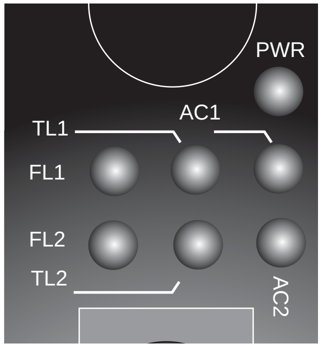
Power the Media Converter

NOTE: The Slide-In-Module is powered through the Media Conversion Center.

OPERATION

Using Status LEDs

Use the status LEDs to monitor the media converter operation in the network.



PWR	**P(o)W(e)R** Steady LED indicates connection to external power.
TL1	**T(wisted-pair) L(ink) 1:** Steady LED indicates a link on the twisted-pair TELCO connection to Converter #1.
FL1	**F(iber) L(ink) 1:** Steady LED indicates a link on the fiber connection to Converter #1.
AC1	**AC(tivity) 1:** Flashing LED indicates activity on Converter #1.
TL2	**T(wisted-pair) L(ink) 2:** Steady LED indicates a link on the twisted-pair TELCO connection to Converter #2.
FL2	**F(iber) L(ink) 2:** Steady LED indicates a link on the fiber connection to Converter #2.
AC2	**AC(tivity) 2:** Flashing LED indicates activity on Converter #2.

*Using SNMP**

Use SNMP at an attached terminal or at a remote location to:

- Monitor the media converter by monitoring:

  Media Converter Power

  Twisted-pair Link Status on Converter #1

  Fiber Link Status on Converter #1

  Activity on Converter #1

  Twisted-pair Link Status on Converter #2

  Fiber Link Status on Converter #2

  Activity on Converter #2

- Enter network commands that:

  Enable/disable Autocross

*See the on-line documentation that comes with TRANSITION Networks *FocalPoint*™ software for applicable commands and usage.

FAULT ISOLATION and CORRECTION

If the media converter fails, isolate and correct the fault by determining the answers to the following questions and then taking the indicated action:

1. Is the *P(o)W(e)R* LED on the media converter illuminated?

NO
- Is the media converter inserted properly into the chassis?
- Is the power cord properly installed in the chassis and at the external power source?
- Does the external power source provide power?
- Contact Technical Support: (800) 260-1312.

YES
- Proceed to step 2.

2. Is the *T(wisted-pair) L(ink) 1* LED illuminated?

NO
- Check the twisted-pair TELCO cables for proper connection.
- Ensure that the twisted-pair copper TELCO cable distance does NOT EXCEED 60 meters.
- Contact Technical Support: (800) 260-1312.

YES
- Proceed to step 3.

3. Is the *F(iber) L(ink) 1* LED illuminated?

NO
- Check the fiber cables for proper connection.
- Verify that the TX and RX cables on media converter are connected to RX and TX ports, respectively, on the other device.
- Contact Technical Support: (800) 260-1312.

YES
- Proceed to step 4.

4. Is the *AC(tivity) 1* LED illuminated?

NO
- Verify that data is being sent from the external devices.
- Verify that all external devices are set to forced 100 Mb/s full-duplex for full-duplex operation.
- Contact Technical Support: (800) 260-1312.

YES
- Proceed to step 5.

5. Is the *T(wisted-pair) L(ink) 2* LED illuminated?

NO
- Check twisted-pair TELCO cables for proper connection.
- Ensure that the twisted-pair copper TELCO cable distance does NOT EXCEED 60 meters.
- Contact Technical Support: (800) 260-1312.

YES
- Proceed to step 6.

FAULT ISOLATION and RECOVERY

6. **Is the *F(iber) L(ink) 2* LED illuminated?**

NO

- Check the fiber cables for proper connection.
- Verify that the TX and RX cables on the media converter are connected to the RX and TX ports, respectively, on the other device.
- Contact Technical Support: (800) 260-1312.

YES

- Proceed to step 7.

7. **Is the*AC(tivity) 2* LED illuminated?**

NO

- Verify that data is being sent from the external devices.
- Verify that all external devices are set to forced 100 Mb/s full-duplex for full-duplex operation.
- Contact Technical Support: (800) 260-1312.

YES

- Contact Technical Support: (800) 260-1312.

CABLE SPECIFICATIONS

The physical characteristics of the media cable must meet or exceed IEEE 802.3™ specifications.

Fiber Cable

MULTIMODE

Fiber Optic Cable Recommended:	62.5 / 125 µm multimode fiber	
Optional:	100 / 140 µm multimode fiber	
	85 / 125 µm multimode fiber	
	50 / 125 µm multimode fiber	
CDFTF1111-100		
CDFTF1313-100	1300 nM	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Link Budget:	11.0 dB	
Typical Maximum Cable Distance*:	2 kilometers	

SINGLEMODE

Fiber Optic Cable Recommended:	9 µm singlemode fiber	
CDFTF1414-100	1300 nM	
Fiber-optic Transmitter Power:	min: -15.0 dBm	max: -8.0 dBm
Fiber-optic Receiver Sensitivity:	min: -31.0 dBm	max: -8.0 dBm
Link Budget:	16.0 dB	
Typical Maximum Cable Distance*:	20 kilometers	
CDFTF1515-100	1300 nM	
Fiber-optic Transmitter Power:	min: -8.0 dBm	max: 2.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -7.0 dBm
Link Budget:	26.0 dB	
Typical Maximum Cable Distance*:	40 kilometers	

*Actual distance dependent upon physical characteristics of network installation.

CABLE SPECIFICATIONS - Continued

SINGLEMODE - Continued

Fiber Optic Cable Recommended:	9 µm singlemode fiber	
CDFTF1616-100	1300 nM	
Fiber-optic Transmitter Power:	min: -5.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -7.0 dBm
Link Budget:	29.0 dB	
Typical Maximum Cable Distance*:	60 kilometers	
CDFTF1717-100	1300 nM	
Fiber-optic Transmitter Power:	min: -5.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -7.0 dBm
Spectral Width:	0.4 nm FWHM	
Link Budget:	29.0 dB	
Typical Maximum Cable Distance*:	80 kilometers	
CDFTF2929-100	1300 nM	
Fiber-optic Transmitter Power:	min: -13.0 dBm	max: -6.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.0 dBm	max: -3.0 dBm
Link Budget:	19.0 dB	
Typical Maximum Cable Distance*:	20 kilometers	
CDFTF2929-101	1300 nM	
Fiber-optic Transmitter Power:	min: -13.0 dBm	max: -6.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.0 dBm	max: -3.0 dBm
Link Budget:	19.0 dB	
Typical Maximum Cable Distance*:	20 kilometers	
CDFTF2929-102	1300 nM	
Fiber-optic Transmitter Power:	min: -5.0 dBm	max: +1.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -3.0 dBm
Link Budget:	29.0 dB	
Typical Maximum Cable Distance*:	40 kilometers	
CDFTF2929-103	1300 nM	
Fiber-optic Transmitter Power:	min: -10.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -3.0 dBm
Link Budget:	24.0 dB	
Typical Maximum Cable Distance*:	40 kilometers	

*Actual distance dependent upon physical characteristics of network installation.

TELCO Copper Cable

Category 5 shielded twisted-pair (STP) or unshielded twisted-pair (UTP) copper wire is required.

CATEGORY 5:

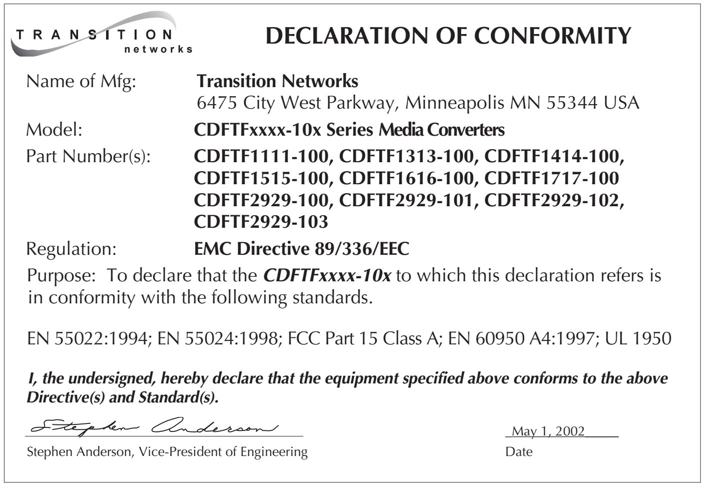
Gauge:	24 to 22 AWG
Attenuation:	22.0 dB /100m @ 100 MHz
Maximum Cable Distance:	60 meters

NOTE: See page 4 for twisted-pair copper TELCO cable signal distribution over 50-pin connector at back of CPSMC1850 chassis.

TECHNICAL SPECIFICATIONS

Standards	IEEE 802.3™	
Data Rate	100 Mb/s	
Dimensions	2.9" x 4.8" x 1.4" (74 mm x 122 mm x 36 mm)	
Weight	8 oz	
Power	12 VDC	
Power Consumption	6.8 watts	
Environment	Typical Operating Temperature*	0-50°C (32° to 140° F)
	Storage Temperature	-20° to 85°C (-4° to 185°F)
	Humidity	5-95%, non condensing
	Altitude	0-10,000 feet
Warranty	Lifetime	

*Operating temperature range for this Slide-In-Module depends on the physical characteristics and the installation configuration of the TRANSITION Networks chassis in which this Slide-In-Module will be installed.



TRANSITION networks

DECLARATION OF CONFORMITY

Name of Mfg: **Transition Networks**
6475 City West Parkway, Minneapolis MN 55344 USA

Model: **CDFTFxxxx-10x Series Media Converters**

Part Number(s): **CDFTF1111-100, CDFTF1313-100, CDFTF1414-100, CDFTF1515-100, CDFTF1616-100, CDFTF1717-100 CDFTF2929-100, CDFTF2929-101, CDFTF2929-102, CDFTF2929-103**

Regulation: **EMC Directive 89/336/EEC**

Purpose: To declare that the ***CDFTFxxxx-10x*** to which this declaration refers is in conformity with the following standards.

EN 55022:1994; EN 55024:1998; FCC Part 15 Class A; EN 60950 A4:1997; UL 1950

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Stephen Anderson

Stephen Anderson, Vice-President of Engineering

May 1, 2002

Date

COMPLIANCE INFORMATION

UL Listed
C-UL Listed (Canada)
CISPR22/EN55022 Class A + EN55204
CE Mark

FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.
Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung !

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in weichen Fällen der Benutzer für entsprechende Gegenmaßnahmen werantwortlich ist.

Attention !

Ceci est un produit de Classe A. Dans un environment domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilsateur de prende les measures spécifiques appropriées.

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